

## CLAIMS

1. A program information display device for displaying a scatter diagram by plotting two arbitrary attributes selected by the viewer from at least two attributes relating to a program on the X-axis and Y-axis, and disposing the program information at a position conforming to the related value about the X-axis attribute and the related value about the Y-axis attribute, comprising:

program information storing means;

program information processing means;

program information display means; and

attribute input means,

wherein the program information storing means stores a related value numerically expressing the degree of relation about at least one program information and at least two attributes of program information,

the attribute input means acquires a first attribute used as X-axis of scatter diagram and a second attribute used as Y-axis,

the program information processing means acquires the first attribute and the second attribute from the attribute input means, and also acquires the program information, related value about first attribute and related value about second attribute from the program information storing means, and

the program information display means acquires the program information, the first attribute, the second attribute, related value about first attribute and related value about second attribute from the program information processing means, plots the first attribute and second attribute on the X-axis and Y-axis of scatter diagram respectively, and displays the program information at a position conforming to the

related value about the first attribute and the related value about the second attribute of the scatter diagram.

2. The program information display device of claim 1, wherein the program  
5 information display means displays icons, in addition to the program information, in the scatter diagram disposed at a position conforming to the related value about the X-axis and the related value about the Y-axis of the control information.

3. The program information display device of claim 1, wherein the attribute is  
10 information about program, and this information includes channel, on-air time, genre, and viewing rate.

4. The program information display device of claim 1, wherein the program  
information stored in the program information storing means includes thumbnail.  
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5. The program information display device of claim 1, 2, 3, or 4,  
wherein the attribute input means further acquires display range of the first attribute and display range of the second attribute, and  
the program information display means further acquires display range of the  
20 first attribute and display range of the second attribute from the attribute input means, plots the first attribute and second attribute on the X-axis and Y-axis of scatter diagram respectively, displays the display range of the X-axis in the display range of the first attribute, displays the display range of the Y-axis in the display range of the second attribute, and displays the program information at a position  
25 conforming to the related value about the first attribute and the related value about

the second attribute of the scatter diagram.

6. The program information display device of claim 1, 2, 3, or 4, further comprising:

5        program information eliminating means,

         wherein the program information storing means stores at least one program information, and related value about at least three attributes of the program information,

         the attribute input means further acquires third attribute and limit value of third  
10       attribute as threshold when displaying the program information in the scatter diagram,

         the program information eliminating means acquires the third attribute and limit value of the third attribute from the attribute input means, acquires the program information and related value about at least three attributes of the program  
15       information from the program information storing means, compares the related value about the third attribute of the related value about at least three attributes of the program information with the limit value of the third attribute, eliminates the program information and related value about at least three attributes of the program information when the related value about the third attribute is less than the limit  
20       value of the third attribute, and saves the program information and related value about at least three attributes of the program information when the related value about the third attribute is not less than the limit value of the third attribute, and

         the program information processing means acquires the first attribute and the second attribute from the attribute input means, acquires the program information,  
25       related value about the first attribute and related value about the second attribute

among the program information and related value about at least three attributes of the program information saved in the program information eliminating means, and thereby does not display the program information having related value about the third attribute less than the limit value of the third attribute in the scatter diagram.

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7. The program information display device of claim 1, 2, 3, or 4, further comprising:

program information number judging means,

10 wherein the program information number judging means acquires program information from the program information processing means, judges the number of program information items, and sends the judged result to the program information processing means, and

15 the program information processing means acquires the judged result from the program information number judging means, determines the information quantity of program information to be sent to the program information display means on the basis of the judged result, and thereby changes the information quantity displaying the program information depending on the number of program information items displayed in the scatter diagram.

20 8. The program information display device of claim 1, 2, 3, or 4, further comprising:

program information number judging means,

25 wherein the program information number judging means judges the display range of program scatter diagram, and sends the judged result to the program information processing means, and

the program information processing means acquires the judged result from the program information number judging means, determines the information quantity of program information to be sent to the program information display means on the basis of the judged result, and thereby changes the information quantity displaying the program information depending on the number of program information items displayed in the scatter diagram.

9. The program information display device of claim 1, 2, 3, or 4, further comprising:

- 10        program information display size setting means,  
         wherein the program information storing means stores at least one program information and related value about at least three attributes of the program information,  
         the attribute input means further acquires third attribute,  
15        the program information processing means acquires the first attribute, the second attribute and the third attribute from the attribute input means, and acquires the program information, related value about the first attribute, related value about the second attribute, and related value about the third attribute from the program information storing means,  
20        the program information display size setting means acquires the program information, the first attribute, the second attribute, the third attribute, related value about the first attribute, related value about the second attribute, and related value about the third attribute from the program information processing means, and determines the character display size setting value of program information to be  
25        displayed in the scatter diagram from the related value about the third attribute, and

the program information display means acquires the program information, the first attribute, the second attribute, related value about the first attribute, related value about the second attribute, and the character display size setting value from the program information size setting means, plots the first attribute and the second attribute on the X-axis and Y-axis of the scatter diagram respectively, and displays the program information in the character size conforming to the display size setting value at a position conforming to the related value about the first attribute and the related value about the second attribute of the program information.

10. The program information display device of claim 1, 2, 3, or 4, further comprising:

program information display size setting means,

wherein the program information storing means stores at least one program information and related value about at least three attributes of the program information,

the attribute input means further acquires third attribute,

the program information processing means acquires the first attribute, second attribute and third attribute from the attribute input means, and acquires the program information, related value about the first attribute, related value about the second attribute, and related value about the third attribute from the program information storing means,

the program information display size setting means acquires the program information, the first attribute, the second attribute, the third attribute, related value about the first attribute, related value about the second attribute, and related value about the third attribute from the program information processing means, and

determines the character display size setting value of program information to be displayed in the scatter diagram from the related value about the third attribute, and

the program information display means acquires the program information, the first attribute, the second attribute, related value about the first attribute, and related value about the second attribute from the program information size setting means, plots the first attribute and second attribute on the X-axis and Y-axis of the scatter diagram respectively, and displays the program information in the icon size conforming to the display size setting value at a position conforming to the related value about the first attribute and the related value about the second attribute of the program information.

11. The program information display device of claim 1, 2, 3, or 4,

wherein the program information display means is three-dimensional program information display means for displaying in three dimensions,

the program information storing means stores at least one program information and related value about at least three attributes of the program information,

the attribute input means further acquires third attribute as Z-axis of three-dimensional scatter diagram,

the program information processing means acquires the first attribute, second attribute and third attribute from the attribute input means, and acquires the program information, related value about the first attribute of the program information, related value about the second attribute, and related value about the third attribute from the program information storing means, and

the three-dimensional program information display means acquires the program information, the first attribute, the second attribute, the third attribute,

related value about the first attribute, related value about the second attribute, and related value about the third attribute from the program information processing means, plots the first attribute, second attribute, and third attribute on the X-axis, Y-axis, and Z-axis of the three-dimensional scatter diagram respectively, and displays  
5 the program information at a position conforming to the related value about the first attribute, the related value about the second attribute, and the related value about the third attribute of the program information.

12. The program information display device of claim 1, 2, 3, or 4, further  
10 comprising:

channel assigning means,

wherein the program information processing means acquires first attribute and second attribute from the attribute input means, and acquires program information, related value about the first attribute of the program information, and related value  
15 about the second attribute from the program information storing means,

the channel assigning means acquires the program information, related value about the first attribute of the program information, and related value about the second attribute from the program information processing means, and determines virtual channels to be assigned in the program information from the related value,

20 the program information processing means acquires the virtual channels from the channel assigning means, and

the program information display means acquires the program information, the virtual channels of the program information, the first attribute, the second attribute, related value about the first attribute, and related value about the second attribute  
25 from the program information processing means, plots the first attribute and second



attribute on the X-axis and Y-axis of the scatter diagram respectively, and displays the program information and the virtual channels at a position conforming to the related value about the first attribute and the related value about the second attribute.

5        13. The program information display device of claim 12,  
         wherein the channel assigning means sums up the related value about the first  
         attribute of the program information and related value about the second attribute,  
         and determines the virtual channel to be assigned in the ascending order or the  
         descending order from the program information of the highest sum.

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         14. The program information display device of claim 12,  
         wherein the program information processing means maintains the combination  
         of program information and assigned virtual channels until the specified condition is  
         satisfied.

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         15. The program information display device of claim 14,  
         wherein the program information processing means maintains the combination  
         of program information and assigned virtual channels for a specific time.

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         16. The program information display device of claim 14,  
         wherein the program information processing means maintains the combination  
         of program information and assigned virtual channels until the power is cut off.

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         17. The program information display device of claim 14,  
         wherein the program information processing means maintains the combination

of program information and assigned virtual channels by a specific number.

18. The program information display device of claim 14,

wherein the program information processing means maintains the combination  
5 of program information and assigned virtual channels until the program  
corresponding to the program information is terminated.

19. The program information display device of claim 12,

wherein the attribute input means acquires the same channel as the virtual  
10 channel displayed in the program information display means when the viewer  
selects a program, and

the program information processing means acquires the channel from the  
attribute input means, acquires the specified channel corresponding to the virtual  
channel from the program information, and displays the program on the screen by  
15 using the specified channel.